3 The presence of lactic acid in abnormal amount in the blood produces functional change in the medulla oblongata and the spinal cord (? posterior columns) when brought into contact with them, and develops the local symptoms of acute rheumatism in a manner similar to the production of the symptoms of locomotor ataxy, with its arthropathies, by organic change.

4. If the portion of the medulla oblongata in the neighbourhood of the origin of the vagus is a point of minimum energy, either hereditary or acquired, then, according to the particular fibres involved, cardiac, pulmonary, or pleuritic complications may be developed during an attack of rheumatism.

5. Salicylic acid combines with the antecedents of lactic acid, and so prevents its formation.

6. If the administration of the remedy be suspended after the symptoms are relieved, and before the "inhibitory chemical centre" has recovered its tone, a relapse will certainly take place.

Such a theory explains the necessity for giving at the commencement, at least, of the treatment, as much of the remedy as the system will bear.—*British Med. Journ.*, Jan. 14, 1882.

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Salicylate of Soda in Rheumatism.

From a study of the results following the use of salicylate of soda in acute and subacute rheumatism, DR. SYDNEY COUPLAND concludes:—

1. That in the majority of cases salicylate of soda speedily reduces the pyrexia and articular pain of acute rheumatism.

2. That unless the administration be long continued, relapses both of pyrexia and of joint affection are liable to occur.

3. That such relapses are not *wholly* prevented from arising during the administration of the drug, and that in some cases they are distinctly due to the lack of proper precaution in matters of diet and rest, owing to the freedom from acute symptoms enjoyed by the patient.

4. That the best method of its administration is in regulated doses, gradually diminished both as to amount and frequency.

5. That no definite influence upon the cardiac or other complications can be observed (although in this series the number of cases of pericarditis was smaller than the average), and that, indeed, both pericarditis and endocarditis may develop whilst the patient is under its influence.

6. That the toxic effects described are serious in proportion to the largeness of the dose, and, perhaps, to the state of impurity of the drug, but that a few seem very tolerant of it (*e. g.*, No. 84). Its alleged depressing action on the heart has to be proved by experiment, and may be due to the soda.

7. Salicylate of soda is certainly *anti-pyretic*, and, to a considerable degree, *anti-rheumatic*. That its employment does not appreciably diminish the time necessary to keep the patient at rest more than under other methods of treatment, but that the immense relief given by its use in the abatement of pain and fever—a relief not to be estimated by statistics—renders it by far the most valuable remedy for the disease at present known.—*Lancet*, Jan. 14, 1882.

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Pilocarpin in Scarlet Fever and Diphtheria.

Professor DEMME, in a long contribution (*Jahrb. für Kinder.*, vol. xvi.), continues the record of his observations on pilocarpin in scarlet fever and diphtheria, commenced in 1877. The conclusions at which he arrives are as follows: 1. The variable results in the observed action of muriate of pilocarpin are due to the presence with it of a second alkaloid, jaborin, resembling, according to Harnack and Meyer, atropia in its physiological action, as the pilocarpin is more like nicotin. 2. When a rapid effect is wanted, it is best administered hypodermically in doses of $\frac{1}{60}$th to $\frac{1}{24}$th of a grain under a year old, and $\frac{1}{2}$th of a grain up to ten years. When given internally, the dose should be two or three times larger, with gum acacia to prevent diarrhœa. These quantities may be increased and repeated if a continuous effect be desired. 3. To prevent the vomiting and collapse which occasionally follow the subcutaneous injection, cognac, wine, strong tea or coffee, or ether, hypodermically, may be previously given. Similar stimulants are recommended when the drug is given by the mouth. The cardiac depression, which may amount to general collapse, with temporary loss of consciousness, and Cheyne-Stokes's respiration, which are liable to follow too large or too frequent doses, require stimulants. 4. Different individuals, and the same individual at different times, vary in their susceptibility to the action of the drug; and a vicarious relation between diaphoretic and sialagogue action is occasionally observed. 5. As a part of the general activity of the secretions, a marked expectorant effect, and in some cases an abundant flow from the nasal, laryngeal, and tracheal mucous membranes, occurs. Another less constant effect at the height or end of the diaphoresis is increased urinary secretion, due to the increased blood-pressure, the rapidity of flow in the glomeruli, and, perhaps, also to an effect of the drug on the renal vaso-motor nerves, or even on the floor of the fourth ventricle. 6. The superficial erythema, perceptible at the beginning of the sweating, is due to irritation of the peripheral vessels. 7. In cases of scarlet fever, where the rash is delayed or incomplete, and where, at the same time, there are severe cerebral symptoms, an energetic diaphoresis by injection of pilocarpin most rapidly removes the scarlatinal poison from the blood, and brings out the eruption, thus relieving the cerebral symptoms. 8. Pilocarpin cannot prevent scarlatinal nephritis, but it is the most effectual remedy against dropsy; and, in cases treated by it, the kidney-affection appears to run a more favourable course. 9. Nor can it prevent an attack of uræmia, occurring from extensive glomerular and interstitial nephritis; but in less severe cases its diaphoretic and diuretic action can avert uræmic attacks threatening life, and can relieve them more quickly than any other remedy hitherto employed. 10. Owing to its expectorant action, it facilitates recovery from catarrhal laryngitis, from infectious and non-infectious croup, from catarrhal pneumonia; and by the relief of symptoms of laryngo- and tracheo-stenosis which immediately threaten life. Similarly, a quicker loosening of the membrane and fibrinous infiltrations of true and also of scarlatinal diphtheria follow the administration of pilocarpin, though they do not appear to exert any action upon the specific contagium of the disease. —*London Medical Record*, December, 1881.

During the past twelve months extensive trial has been made, on the Continent more than in England, of pilocarpine in the treatment of diphtheria. The use of such a depressing agent in a disease in which there is a marked tendency to asthenia may seem hazardous, but the agent has been given for its local influence, to aid, by augmenting the buccal secretions, in the separation and detachment of the false membranes. The method originated with Dr. Guttmann, of Cronstadt in Silesia, who, in October, 1880, published the results obtained by this method in eighty-one cases. Of this number, fifteen were, in his opinion, so severe that they would probably have died under any other method of treatment, and thirty others were of moderate severity. All the cases recovered. The abundant and continued salivation established by the pilocarpine detached the membranes, removed the infiltration of the tissues, and in most of the cases the pharynx recovered its normal aspect in from one to three days, a little longer time being required in a few cases of greater severity, but in only two cases did more than a week elapse before recovery.

Results so startling, in a disease so grave, naturally led to the trial of the method in all countries, and during the past year it has been extensively employed in Germany, Russia, and France. The results of the trials have been published in many instances, and those of the several observers have been collected by M. Picot, in the last number of the Swiss *Revue Médicale*. A comparison of these facts with some recorded elsewhere does not, it must be confessed, afford much support to the alleged value of the method of treatment. The total number of the cases in which it has been tried is 129, and of these no less than 47 have died, showing a mortality of about 36.5 per cent., or more than one in three. At the same time, the impression conveyed by massed statistics is apt to be misleading on such a subject. It is clear that in a considerable number of the fatal cases the treatment was commenced too late for life to be saved by any means. Some of the patients, for instance, were already in a state of collapse, in which the fatal end would be rather hastened by the general, than hindered by the local, action of pilocarpine. In other cases the treatment was commenced after tracheotomy had been performed, and under such circumstances it can hardly be said to have had a fair trial.

The results obtained by different observers varied in some instances so much that they can only be accounted for by assuming a difference in epidemic severity. Lax, for instance, treated ten children: the condition of six was grave, and that of two was desperate, but all the cases recovered, the false membrane coming away freely in the abundant mucus and saliva. On the other hand, Alfoeri tried pilocarpine in six cases, all of which proved fatal. Several of those who have employed the method arrived at the conclusion that it is more serviceable in adults than in children, and in pharyngeal than in primary laryngeal diphtheria. Of the cases treated by Neumeister, for example, all the adults (four in number) recovered rapidly, but one-half of the children died. He concludes that it ought not to be employed in the case of children. Of the cases treated by Dehio, all those (fourteen in number) in which the diphtheria was limited to the pharynx recovered, although several of them were most severe, while of ten cases of primary laryngeal diphtheria one-half died; but it is right to add that the treatment was commenced in most of them too late to afford it a fair chance. Moreover, in the case of a child aged eleven, recorded by Lereboullet, it can hardly be doubted that pilicarpine obviated the necessity for tracheotomy. Attacks of urgent dyspnœa had occurred, and asphyxia appeared imminent. Two injections each of five milligrammes of pilocarpine had been given, and six hours after the second an abundant salivation took place, and a quantity of false membrane was expelled. The child slept calmly afterwards, and, the treatment being continued for a few days, the symptoms rapidly disappeared.

It may reasonably be asked whether an agent so powerful as pilocarpine is not likely to be injurious if it fails to do good? On this point also diverse opinions have been expressed. Guttmann could trace no prejudicial influence in any case in which he tried it; nor could Kuster. But Archambault, who lost every severe case thus treated, observed the sweating to be followed by extreme nervous depression; Alfoeri attributed to it a pulmonary œdema, which proved fatal to one of his patients; Weise lost three cases from collapse soon after commencing the treatment; and Neumister attributed to it extreme feebleness or sudden irregularity of the pulse, which he observed in six cases. These opinions are not reassuring, although the symptoms observed may in some cases have been due to the disease, and not to the remedy.

The drug has been administered by the mouth, skin, and rectum. The former method was the one employed by Guttmann, the average dose of pilocarpine being one-fiftieth of a grain for a child and one-twentieth for an adult, given, with a little pepsine, in water acidulated with hydrochloric acid, and every dose was followed by a small quantity of Hungarian wine. He urges most strongly the importance of regular administration, the interruption of the treatment by sleep being always succeeded by an increase in the local symptoms. He attributes to the wine the prevention of any injurious effects from the depressing influence of the pilocarpine. Some of those who have employed this agent have not followed Guttmann's method rigorously, the doses given by Archambault, for instance, having been considerably larger. By some, hypodermic injections have been employed, and with success; while Lepidi-Chioti produced salivation in ten or fifteen minutes by enemata containing half a grain of pilocarpine.

The conclusion from this survey of the facts is certainly disappointing to the expectations raised by Guttmann's original results, which become the more remarkable, and even mysterious. But the facts at present ascertained are insufficient to decide the influence of pilocarpine in diphtheria, and further observations are necessary in cases in which the agent is employed sufficiently early to afford it a fair scope.—*Lancet*, Dec. 3, 1881.

Risks of Intra-Pleural Injections.

A few years ago we heard far more frequently of fatal accidents occurring during the operation of washing out an empyema than we have of late; but we are reminded of these risks in a note from Prof. Billroth's clinic in the *Allegemeine Wiener Med. Zeitung* for December 20th. The writer says that Professor Billroth has become convinced of the inutility of injections for the purpose of washing out the empyemic cavity, except in the case of blood-clots and decomposing secretion; and in the latter case it suffices to perform a single but thorough injection. Thus in one case of a shot-wound in the left thorax, leading to putrid empyema, Professor Billroth made a counter-opening, and for four days allowed thymol to flow through. In ordinary empyema the chances are favourable when the operation is done at the right time, for the longer pus remains in the thorax the longer the lung keeps atelectatic, and thus does not approach the wall of the thorax. A rib is resected, a drainage-tube introduced, and pus allowed free escape—a method of treatment much like that practised by Hippocrates, who bored through the rib and introduced a short smooth metal tube into the opening. To diminish pus formation a rod of iodoform can be placed in the pus cavity. Injections of cold disinfecting fluids often lead to ill consequences. Professor Billroth relates one—a female, twenty years old, with empyema, who was treated by means of injections. One day, when a cure was nearly accomplished, she became unconscious during the injection, and could not be restored. Dr. Wölfler also had an older patient who became unconscious during the injection, but who recovered. Billroth explains these remarkable phenomena, that a shock is received by the organism, excited through the peripheral nerves by means of cold water, and under ever so slight conditions, it may be the cause of death; just as a mere blow on the testicle or stomach region can be fatal. Therefore it is important to employ injections, when they appear necessary, of warm fluid.—*Lancet*, January 7, 1882.

Operative Interference in Pulmonary Affections.

Dr. EDWARD BULL, of Christiania, has been carrying on the surgical line of treatment of pulmonary cavities indicated by Pepper, Mosler, Fenger, and Hol-